

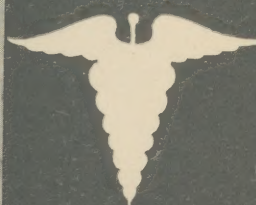
THE SURGEON'S

Circular Letter

VOLUME • VI

NUMBER • 6

1 JUNE 1951

A FAR EAST
PERIODICALOF ARMY
MEDICAL SERVICES
INFORMATION

MEDICAL SECTION • GHQ • FAR EAST COMMAND

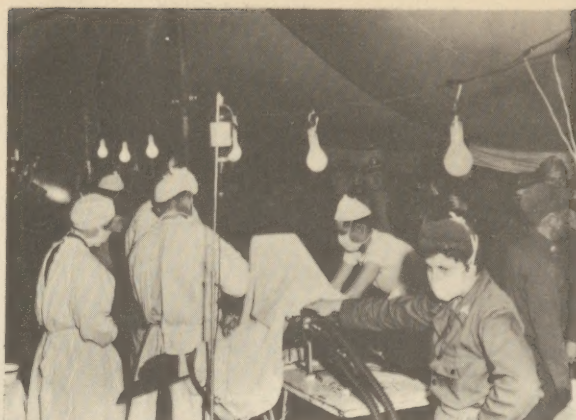
APO 500

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Weary litter bearers race up Hill 902 on fourth consecutive mission



A group of UN Medical Officers observe an operation on Chinese Prisoner of War at the 8063 MASH, Korea



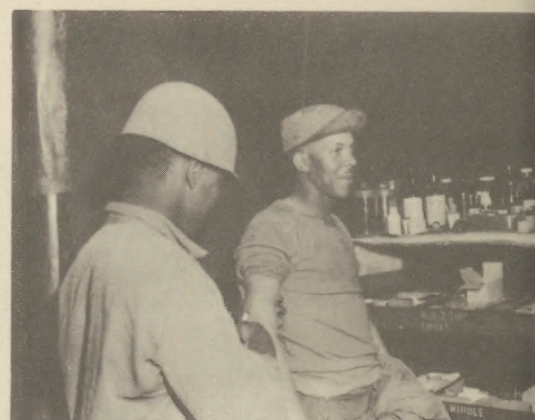
Maj Gen Edgar Erskine Hume greets Col Ramstad of Norwegian hospital



Newest type of litter hood for helicopter medical evacuation



South Korean doctor examines refugee while nurse administers typhus shots



Medical technician of tank battalion immunizes tank commander at medical detachment in Seoul



Screen star Jennifer Jones chats with wounded ranger at Tokyo Army Hospital during FEC tour



Battle casualty is evacuated across stream. South Koreans aid US troops



First contingent of Ethiopian Army troops arrive in Pusan for UN duty

On the cover

Third Division medical technicians administer life-giving whole blood to a critically wounded British lieutenant. The incident occurred near Uijong-bu in western Korea.

All photographs are from U. S. Army Signal Corps unless otherwise stated.

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THE SURGEON'S Circular Letter

Volume VI - Number 6

1 JUNE 1951

General Headquarters
Far East Command
Medical Section
APO 500

ADMINISTRATIVE

SUBJECT

SECTION

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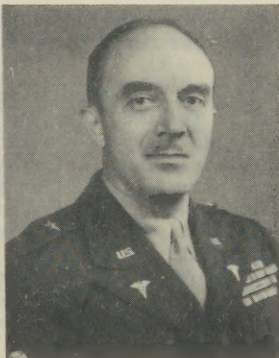
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I. GENERAL BLISS RETIRES - GENERAL ARMSTRONG APPOINTED NEW SURGEON GENERAL

The Department of the Army confirmed on 1 June 1951 the retirement of Major General Raymond W. Bliss after four years of service as The Surgeon General of the U. S. Army. Major General George E. Armstrong, formerly Deputy Surgeon General under General Bliss, has been appointed to the position of The Surgeon General.



MAJ. GEN. RAYMOND W. BLISS



MAJ. GEN. GEORGE E. ARMSTRONG

The following message from General Bliss was relayed to major U. S. Army medical installations throughout the world.

"At this time of my retirement I send greetings to all members of our world-wide medical service. The

knowledge of your unfailing devotion to the health and professional care of your comrades has ever been humbly in mind during my service as Surgeon General. During these years your efforts have resulted in a health record heretofore unexcelled and in unsurpassed medical care under war conditions. My thanks and sincere best wishes for your future."

Neither General Bliss nor General Armstrong is a stranger to the Far East Command. General Bliss toured medical installations throughout the command during September 1950 and March 1951. General Armstrong's most recent visit took place early in 1950.

Major General Edgar Erskine Hume, Chief Surgeon, FEC, in commenting upon the retirement of General Bliss and the assumption of duties by General Armstrong, said:

"The two visits of Surgeon General Bliss to this command since the outbreak of the Korean conflict have been of great value in the upbuilding of morale among the medical service personnel of all ranks. General Bliss not only saw the principal hospitals in Japan and Korea, but he also visited the forward areas and discussed medical problems with the units charged with the care and evacuation of the wounded.

"General Armstrong also knows conditions in this part of the world at first hand. He spent several weeks visiting all of the areas of this command shortly before the outbreak of the Korean conflict. He has already signified his intention of returning

as soon as his new duties allow and at that time will visit Korea to see the military hospitals that are serving the United Nations Command and the medical units charged with evacuation.

"Since General Armstrong has been Deputy Surgeon General for four years, he is completely familiar with our needs. We are delighted that he was selected by the President for appointment as Surgeon General."

II. NORWEGIAN MOBILE SURGICAL HOSPITAL REACHES FAR EAST COMMAND

Personnel of the newest medical unit to join the UN Forces, the Norwegian Mobile Surgical Hospital, reached Tokyo during May.

Arriving in two contingents on 18 and 25 May, the completed organization, consisting of 12 surgeons, 15 nurses, one Chaplain and 51 of "other ranks," proceeded immediately to the 279th General Hospital.

Colonel Herman M. F. Ramstad has been named Commanding Officer of the unit. Lt. Colonel Christian Egar and Major Bernard Paus had come to Tokyo early in the month, and acting in liaison with the Medical Section, GHQ, had formed plans for the training and utilization of the group.

Equipment, medicine, supplies and maintenance for the Norwegian hospital are being furnished by the United States Government on a reimbursable basis.

The Norwegians trained under the direction of the hospital staff at Camp Sakai in order to familiarize themselves with the equipment they are using, before joining the ranks of UN Forces in Korea.

Greeting the new group on its arrival in Japan were Mr. C. P. Reusch, Norwegian Minister; Mr. S. G. Grue, Legation Secretary; Major General Edgar Erskine Hume, Chief Surgeon, FEC, and Colonel W. J. Moreland and Lt. Colonel H. E. Archer, Plans and Operations Division, Medical Section, GHQ.

III. GENERAL SIMMONS SURVEYS PUBLIC HEALTH PROGRAM



The success and effect of the civilian public health program in Japan never has been duplicated in history. Brig. Gen. James Stevens Simmons (Ret.), Dean of the Harvard School of Public Health, said prior to his departure for the United States.

General Simmons, senior consultant in preventive medicine to The Surgeon General, U. S. Army, arrived in Japan 24 March to consult on military preventive medicine in Korea and to conduct a survey of public health and welfare activities in Japan. His itinerary has included visits to various places in Korea and to Sendai, Osaka, Kyoto, Kobe, Hiroshima and Tokyo in Japan. He has observed public health center operations, sanatoria, hospitals nursing and medical schools, food sanitation activities and vaccine production plants.

"The advances made under the SCAP Public Health and Welfare program headed by Brig. Gen. Crawford F. Sams, with the cooperation of Japanese Government officials, educators, doctors and the people themselves, are almost miraculous," the General stated. "Japan today has achieved the enviable status of being the healthiest nation of the Far East."

Reviewing the findings of his survey, the General observed that the communicable disease control program has been particularly successful. The death rate for tuberculosis has dropped more than 50 percent since 1945; smallpox has been practically eliminated; typhus, typhoid, paratyphoid and diphtheria incidence rates indicate excellent control.

"Smallpox control was achieved through the largest mass vaccination programs ever attempted by any nation. In the spring of 1946 and again in the summer of 1949, the entire population of Japan was immunized against this serious disease.

"Everyone up to the age of 60 years, approximately 60,000,000 people, has been vaccinated against ty-

phoid and the paratyphoid fevers. Through a program of DDT dusting, spraying, immunization and education by dissemination of information concerning lice and epidemic typhus fever through every type of news media, this disease has also been reduced to a negligible rate.

"The tuberculosis death rate of 280 per 100,000 in 1945, dropped to 140 deaths per 100,000 in 1950 and still is falling rapidly. This has been achieved through hospitalization of all active cases; inauguration of a school lunch program for the supplemental feeding of school children, emphasis upon education of medical and nursing professions in diagnosis and medical care; mass examination of school children, immunization with BCG vaccine and treatment of active cases with streptomycin."

Health centers as reorganized under the Occupation were another focal point of Gen. Simmons' tour.

The first health centers in Japan were established early in the 1930's by the Ministry of Home Affairs. Their exact purpose and function was somewhat vague although available information indicates that they served primarily to offer guidance to the general public on health matters and also carry out limited examinations for tuberculosis. They functioned poorly, suffered from lack of trained personnel and proper supplies and equipment and generally contributed little to the public health. Their operations and effectiveness were almost completely disrupted by the war.

"The Health Center program in Japan today is one which could well serve as an example to the world," the General declared. "From the chaos which existed at war's end they have emerged into efficiently operated agencies which are responsible in great measure for the continued success of the nation's health and welfare program.

"The first step was to establish health center districts within the 46 prefectures of Japan with one district for approximately each 100,000 population.

Already 724 of the planned 800 health centers are in operation. They are the administrative and service units which carry out the details of the nation's public health program at the local level. They are a fundamental part of the public health organization since they are that part of the organization with which the public is most intimately associated. They reach the grass roots.

"The civilian public health program has been no 'Santa Claus' program in Japan," the General asserted. "To the Japanese people themselves goes a great deal of the credit for its success. They now not only produce vaccines sufficient for their own immunization programs, but are exporting smallpox vaccine,

penicillin and other anti-biotics. They have created an economic resource.

"They are raising the standards of training for the medical, nursing and pharmaceutical professions. They have strengthened their health program through the enactment of necessary and effective legislation and accompanying enforcement ordinances, regulations and instructions."

EDITORIAL NOTE: Attention is invited to an article on page 81 of the 1 May issue, the SURGEON'S CIRCULAR LETTER. The activities of General Simmons with regard to Preventive Medicine in Korea are discussed therein.

IV. WATER PURIFICATION IN KOREA



Members of one water supply unit with the 1st Cavalry Division in Korea have purified over fifty-seven million gallons of water since they began operations. This water purification section, and

others like it, convert contaminated river water into safe drinking water for use by Eighth Army combatants.

Putting one of the units into action requires both the employment of military tactics and technical knowledge.

"Before we can get anything working," SFC Herbert M. Potts, an Army engineer, said, "we send out a small reconnaissance patrol to locate a suitable riverside pumping point. We usually try to set up about 2,000 yards from the front lines when we supply fighting regiments. Sometimes we get closer, but we've got to pick a spot that is protected from artillery fire and is accessible to regimental water trucks coming down the main road."



It takes about 45 minutes to process one cycle of water after the unit is put into operation. The processing, which includes filtering, cleansing and purification, involves the use of various chemicals and three separate canvas water tanks into which water is pumped from a river.

Although water supply is an Engineer function, standards of purity are set by the U.S. Army Medical Service and continuous spot-checks are made by Sanitary Engineers, division surgeons' offices or by separate sanitary detachments.

Surveys for chlorine residual (chlorine content remaining after the original purifying action) are made and samples for bacteriological tests are taken at the water points, water trailers, five-gallon cans and in some instances right down to the water in an individual soldier's canteen.

Purified river water, according to Army engineers, is as safe to drink as that pumped into a U.S. home, a point with which Sanitary Engineers of the Medical Service concur.

V. TERM 'ECHELON' IS DROPPED AS APPLIED TO MEDICAL SERVICE

The term "echelon," as used in conjunction with Army Medical Service, is no longer considered to be appropriate. Rather than indicating medical service by echelons, such medical service will be more specifically designated by denoting the organization or agency responsible for providing that level of service.

As in the past, there continues to be five levels of medical service. These are known comparatively as follows:

NEW TERMINOLOGY

Unit Medical Service
Division Medical Service
Field Army Medical Service
Communications Zone Medical Service
Zone of Interior Medical Service

OLD TERMINOLOGY

1st Echelon
2nd Echelon
3rd Echelon
4th Echelon
5th Echelon

Army medical service in a theater of operations consists of four distinct but mutually supporting levels. Each is so named as to designate the agency responsible for the performance of such service. The first

three levels (unit, division, and field army) provide medical service for tactical units in the combat zone and consist principally of mobile medical units. Medical service of the communications zone is characterized by large, fixed hospitals capable of providing detailed and prolonged medical care for the sick and wounded. The communications zone medical service is also responsible for providing medical logistical support to the combat zone medical service.

Zone of the interior medical service is typified by medical installations capable of providing definitive medical service for all sick and wounded patients whose treatment requires a period of time in excess of the established evacuation policy in a given theater of operations.

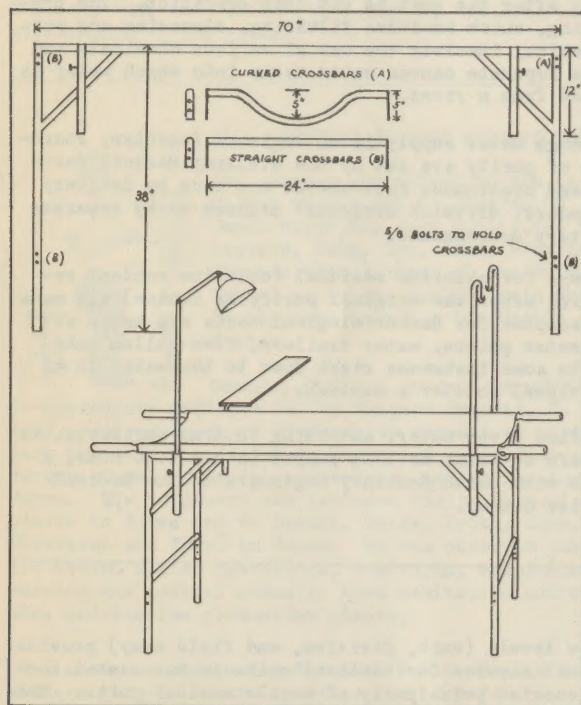
The newly adopted terminology for designating the separate levels of medical service sharply defines the responsible agency as well as the type of medical service rendered. Moreover, it removes any possibility of misunderstanding, as often developed previously, when two or more services employed the term 'echelon,' but attached entirely different meanings to the term.

VI. IMPROVISED PORTABLE OPERATING TABLE

Lt Colonel Kryder Van Buskirk, MC; Captain Robert Solomon, MC; Lt (jg) Edward Twitchell, USNR; Sgt Raymond A. Boyd, RA Mobile Army Surgical Hospital, 8076th Army Unit, APO 301

At the outset of the Korean campaign, there was a shortage of medical equipment and supplies. Among the T/O&E items short, for the Mobile Army Surgical Hospital, 8076th Army Unit, were field operating tables. Rather than use "saw horses" or temporary tables, an adequate, permanent and easily transportable table was designed and made.

Using one (1) inch metal pipe, a sturdy table was constructed of such dimensions that the aluminum or wooden pole litter would fit within the framework. (See diagram) The sides of the framework were spot-welded in one piece with three eighth (3/8) inch bolts placed in the legs, so that the cross bars could be attached to join the sides. Lengths of one (1) inch pipe were welded on the sides, near each end, for use of arm boards, accessory spot lights,



and/or stirrups. These accessories were constructed with three fourth (3/4) inch solid metal rods, and were secured by screws through the one (1) inch piping. At one end of the frame, the top cross bar was curved downward, giving a five (5) inch clearance which presented adequate exposure for perineal surgery when stirrups were used.

The table can be dismantled or set up in a very short time. The sides and cross bar, once dismantled, can be fastened together with rope or adhesive plaster and easily handled, requiring minimal space in transportation. (See diagram)

ADVANTAGES:

1. The table is easily constructed and inexpensive.
2. The attached accessories simplify procedures and save valuable time in surgery.
3. The patient can be moved from pre-operative ward by litter, operated upon without the troublesome and occasional shock-precipitating procedure of moving from litter to the operating table.
4. The table can be readily assembled or disassembled.
5. The table is completely portable, requiring minimal packing space.

DISADVANTAGES:

The inability to break table in the center, for procedures as anoscopic examination, may be considered a disadvantage. For thoracic-abdominal approaches, etc., the lateral position with sandbags has been adequate. By placing a board across the frame, under the patient, better exposure for these and some abdominal procedures has been experienced. Where Trendelenburg position is indicated, placing wooden blocks under the ends of the table has proved satisfactory.

CONCLUSIONS:

A satisfactory portable operating table has been described and diagramed. Five similar tables have been constructed and used by this surgical hospital in the field. We have found it completely satisfactory in all respects, for a period of ten months, and suggest its utilization by other mobile field units.

VII. RECENT DEPARTMENT OF THE ARMY AND FEC PUBLICATIONS

AR 40-441, C-1, 18 Apr 51: Medical Service - Joint Utilization of Armed Forces Medical Laboratories and Epidemic Disease Control Units

AR 600-450, C-2, 24 Apr 51: Personnel - Separation for Physical Disability

AR 40-615, 26 Apr 51: Medical Service - Pharmacy Management

AR 40-340, 3 May 51: Medical

Service - Blood for Transfusion and Other Purposes

AR 10-349, 7 May 51: Organization and Functions - Armed Services Medical Regulating Office

SR 605-60-40, C-1, 16 Apr 51: Officers - Officers Medical Service Corps Allied Scientist Procurement - Senior Psychology Student Program

SR 360-32-1, 1 May 51: Public Information - Biological Warfare

SR 605-60-45, 7 May 51: Officers - Medical Service Corps Procurement - Hospital Administration Residency Program

SR 40-1025-40, 8 May 51: Medical Service - Preparation of Medical Report Cards on Patients Processed for Separation or Retirement for Disability

SR 40-1080-60, 8 May 51: Medical Service - Out-patient Report (RCS MED-80)

DA CIR 30, 16 Apr 51: Sec III - Use of DA AGO Forms 8-225 and 8-226

DA CIR 33, 4 May 51: Sec I - Limiting Date on Receipt of Interservice Transfer Applications

GO 30, 3 May 51: Sec I - Army Medical Research Laboratory, Fort Knox, Kentucky

T/O&E 8-750, 5 Feb 51: Veterinary General Hospital, Communications Zone, 500 Patients

T/O&E 20-117, C-2, 21 Feb 51: Hospital Band

T/O&E 8-500, C-2, 2 Mar 51: Medical Service Organization

T/O&E 8-650, C-2, 2 Mar 51: Medical General Laboratory

T/A 8-8, 13 Dec 50: Army Medical Service Meat and Dairy Hygiene School

T/A 11-101 (8-551), 12 Feb 51: Allowances of Signal Corps Expendable Supplies for General Hospital, 1,000-Bed, Communications Zone

T/A 11-101 (8-16), 15 Feb 51: Allowances of Signal Corps Expendable Supplies for Headquarters and Headquarters Company, Medical Battalion

T/A 11-101 (8-500), 6 Mar 51: Allowances of Signal Corps Expendable Supplies for Medical Service Organization

T/A 11-101 (8-562), 20 Mar 51: Allowances of Signal Corps Expendable Supplies for Station Hospital, 50-bed, Communications Zone

T/A 11-101 (8-76), 21 Mar 51: Allowances of Signal Corps Expendable Supplies for Headquarters and Headquarters Company, Armored Medical Battalion

T/A 11-101 (20-117), 27 Mar 51: Allowances of Signal Corps Expendable Supplies for Hospital Band

T/A 8-1, C-1, 6 Apr 51: Medical Replacement Training Center

TB MED 233, 5 Apr 51: Veterinary Laboratory Service (Food Analysis)

TB MED 71, 26 Apr 51: Tuberculous Pleurisy with Effusion

TC 9, 30 Mar 51: Field Hospital T/O&E 8-510

FM 8-10, March 1951: Medical Service - Theater of Operations

DA SUPPLY BULLETIN, 12 Mar 51: Combat Consumption Rates - Medical Department

JLCOM CIR NO. 9, 20 Apr 51:

I. Immunization

II. Venereal Disease

III. Influenza Detection and Control

IV. Detection and Control of Respiratory Disease

V. Diagnosis of Virus and Rickettsial Diseases

VI. Poliomyelitis

VII. Scrub Typhus Control

VIII. Operation of Pharmacies

IX. Food Handlers and Household Servants

X. Physical Examinations and Immunizations

of Japanese and Foreign Nationals Employed by Occupation Forces

XI. Barber Shops and Beauty Parlors

XII. Water Supply

XIII. Control and Treatment of Scabies

XIV. Rabies Control in Animals

XV. Report of Sick and Wounded

XVI. Reporting Infectious Diseases of the Central Nervous System

XVII. Statistical Health Reports

XVIII. Checklist for Unit Commanders

XIX. Suppressions

JLCOM CIR NO. 11, 28 Apr 51:

I. Insect and Rodent Control

II. Utilization of Army Medical Service Officers

III. Private Duty Nurses

IV. Accounting for Certain Army Medical Service Property

V. Diagnostic Biologicals

VI. Birth Certificates and Registration of Births

VII. Utilization of Indigenous Dental Personnel

VIII. Utilization of Qualified Professional Foreign and Japanese Nationals in Medical Installations

IX. Hospital Fund Report

X. Hospital Fund Durable Property

XI. Procurement and Repair of Spectacles

XII. Pets, Shipment To and From Japan

XIII. Suppressions

VIII. UN EFFORT SAVES CANADIAN'S LIFE



When Lt. Michael Barrow, RCN, of the Canadian HMCS Huron was taken ill with acute appendicitis during a carrier offensive off the Korean coast, ships of four navies cooperated in the effort to save his life. A British naval surgeon flew by helicopter to an American ship to get a second medical opinion; an American surgeon flew to the British

ship and assisted in an examination of the dangerously ill patient, and an Australian destroyer raced at 27 knots to take him to an American Army hospital.

The Huron was part of a destroyer screen for the British carrier "Glory" when Lt. Barrow suffered his attack. The Huron's doctor diagnosed acute appendicitis and had his patient transferred by jackstay to the carrier where better facilities were available. He was operated upon successfully, but two days

later he had a relapse. The Glory's principal medical officer decided to obtain a second medical opinion, and flew in the carrier's helicopter to the U. S. light carrier Bataan. He and a U. S. Army Medical Corps officer returned for a reexamination.

It was decided that Lt. Barrow should be rushed to a hospital ashore where he could obtain specialized treatment. He was again put into a stretcher and carefully jackstayed across to the Australian destroyer HMAS Warramunga which came alongside to within 10 feet of the Glory so the transfer could be effected with least discomfort to the patient. The Warramunga was then ordered to proceed at full speed to base. There the officer was taken ashore to a U. S. Army hospital where his condition has improved.

During his illness aboard the Glory, Lt. Barrow was under constant supervision night and day. A daily report on his condition was relayed to his home and Barrow's father has signalled his thanks for the United Nations effort in saving his boy's life.

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IX. COMBAT EXHAUSTION

Colonel Albert J. Glass, MC, Psychiatric Consultant, GHQ, FEC



The term "Combat Exhaustion" is applied to the well-known acute psychiatric battle casualty to designate a temporary psychological failure of the soldier to function adequately in a combat situation. The manifestations of combat exhaustion are diffuse and may involve both the psychic and somatic spheres. Characteristically

the signs and symptoms are quite variable. The clinical picture may change in a matter of hours or from day to day. Many cases are mild, as exemplified by those individuals who only verbalize the subjective sensations of fear in battle with no objective evidence of anxiety. Other psychiatric casualties are more severe, with tearfulness, depression, gross tremulousness, or hysterical blindness and paralysis. A smaller group of cases exhibit such a severe disruption of personality function that they are out of contact with their environment and present a transient psychotic syndrome.

The acute mental breakdown of combat is an age-old phenomenon. Even the bible records the panic and paralyzing fright of participants in battle. It has always been considered good military strategy to weaken and disorganize the enemy by utilizing the crippling effects of fear stimuli. The use of bugles, cymbals and whistles as currently employed by the Chinese troops is an ancient maneuver of this type. Indeed, the Walls of Jericho were figuratively, at least, disintegrated by the blowing of a trumpet. In modern warfare, artillery fire and air attacks are the most prolific producers of fear as well as actual battle casualties. It is an old military axiom that one never wastes artillery shells so long as they are hurled at the enemy. Even animals utilize fear-producing tactics, as exemplified by the roaring of the lion which renders the victim helpless before the actual attack.

It is evident that any method designed to increase the strength and number of fearful stimuli may serve to undermine the ability of individuals to react aggressively to a source of danger. This occurs because the subjective sensations of fear are never helpful to the person but are painful. They make it difficult for him to think logically, and operate to

inhibit physical activity. Only the physiological concomitants of fear are valuable in that they prepare and support the soldier for the increased bodily demands required for fight or flight.

The emotional overtones inherent in the words used to label the combat psychiatric casualty are of major importance; they affect the attitude of the patient towards his condition as well as influence the opinion of his fellow soldiers, friends, and family. Prior to the advent of modern medicine, the emotional upheaval in battle was designated by lay terminology indicative of paralyzing fear or flight with the moral connotation of cowardice.

It has been only since World War I that military medicine has been called upon both to prevent and treat psychiatric casualties in an effort to better conserve the fighting strength. Because the largest fear and casualty producing agent was artillery fire, mental breakdown in battle became known as "shell-shock." This term, although descriptive, was unfortunate because it produced confusion and unclear thinking on the part of the patient and the physician. Medical officers debated amongst themselves as to the amount of brain damage present because of the inevitable history of a nearby explosion. Patients were easily influenced to believe then, as today, that their symptoms were a logical result of an outside force which caused irreparable injury to the mind. They readily took the view which removed personal responsibility for an emotional conflict. The entire syndrome was fostered and fixated by prolonged hospitalization with subsequent evacuation to the ZI. Following World War I, it became generally recognized that "shell-shock" was primarily a psychological problem, and that the effect of air blast upon the head could not explain most of the immediate symptoms and all of the later persistent illness.

At the outset of World War II, the pendulum had swung completely to the view that the emotional disruption of battle was an acute traumatic neurosis and should be classified accordingly. As a result, in the early phases of World War II, psychiatric casualties were designated as "psychoneurosis, anxiety state," "anxiety reaction," "psychoneurosis mixed," "conversion hysteria," etc. This nomenclature, like "shell-shock," proved to be misleading to the medical officer and traumatic to the patient. It unnecessarily conferred the diagnosis of a fixed neurotic disease

upon a fluid and transient emotional disorder. Again, it influenced the psychiatric casualty to believe he was suffering from a serious mental illness for which there was a poor prognosis and in which he could readily utilize the secondary gain mechanism of illness to displace responsibility for his symptoms and behavior upon the workings of his unconscious mind.

Obviously, a new diagnostic category was needed. In 1943, the designation "combat exhaustion" was originated to convey a more realistic appreciation of a transient psychological breakdown caused by battle stress, which might occur in individuals with or without neurotic predisposition. The word "exhaustion" gave the connotation of a logical result of combat from which one can recover by such ordinary means as rest and recuperation. This diagnosis quickly became popular and was adopted by all branches of the service with such modifications as "combat fatigue," "flying fatigue" and "operational fatigue."

After the initial confusion of the Korean campaign, "combat exhaustion" became the standard diagnosis to categorize the acute psychiatric casualty among divisional or other troops in the forward areas. However, other definitions have already begun to creep in and distort the original meaning of the term. On the one hand, some have reverted to the past and regard combat exhaustion as a fancy name for being cowardly or yellow; on the other, it has become confused with physical exhaustion and considered an organic disease. It is the purpose of this paper to clarify the concept of combat exhaustion and to explain its complex etiology which may include physical factors. It is hoped that a better understanding of the problem will point to logical methods of prevention and early treatment which are vitally necessary to conserve and salvage the fighting strength of our troops.

It has been stressed that the instinctive fear of the loss of one's life is the primary or basic cause of combat exhaustion. Yet this is too simplified a concept, similar to considering that the tubercle bacillus is the cause of the active disease. As in tuberculosis, it should be recognized that there are multiple causative factors, such as individual susceptibility to the disease, the amount and intensity of the dosage of the traumatic agent, and the lowering of sustaining powers against illness, called resistance. These are of far more importance in producing the clinical disease than the ubiquitous fear of death in battle, which, like the germ of tuberculosis, is present in almost everyone.

When attention is shifted from the threat to life as the major cause of combat exhaustion to an examination of individual susceptibility and the sustaining powers which prevent fear from overwhelming the person, a new way is opened for a more fruitful understanding of the entire problem.

In considering individual susceptibility to emotional breakdown, it must be conceded that all persons do not have the same capacity of adjustment to stressful situations. In combat it is particularly necessary that the soldier be able to mobilize and externalize aggression, in order to adequately cope with the enemy. The timid, passive person who has never had a fight and who rarely fires his rifle is especially vulnerable to fear because he is unable to discharge tension by hostile action. Consequently, anxiety builds up rapidly and becomes uncontrollable. To a lesser degree, the overly careful or overly ag-

gressive individual is more susceptible to combat stress because such character traits have been developed as a protection against excessive inner feelings of insecurity and dependency. Continuous combat produces a collapse of the hitherto effective defenses of the individual with the consequent rise of unbearable tension.

Another component of the personality which contributes to the adjustment of the combat soldier is the conscience. This is that well-known internal policeman that forces one to perform unpleasant, distasteful and even dangerous tasks, because of duty, honor, self-esteem and self-respect. Individuals with an average degree of this conscience element are internally compelled to keep going on in battle despite terror and a wish to flee or be helpless. Self-esteem is a potent force in human behavior and is deeply ingrained in individuals of our western civilization. It is responsible for the phrase, "I have to live with myself." If the strength of the conscience is low, the soldier lacks an internal compelling agent and more readily allows himself to be overcome by external stress. If the conscience is overly severe, it punishes the person for even the unavoidable disastrous episodes so common in battle. This reaction is not infrequently observed in officers and non-commissioned officers who blame themselves for the normal vicissitudes and casualties among their men, despite the intellectual knowledge that such events are inevitable in combat. This feeling of guilt adds a further burden to the existing tension and may precipitate a mental breakdown.

The omnipresent fear of death and the individual susceptibility to combat stress are not sufficient to explain the causation in most cases of combat exhaustion. It is common knowledge that some combat units consistently have fewer psychiatric casualties than others, despite an equivalent or greater degree of battle stress. This discrepancy in psychiatric rates can be observed among the various units of a battalion, a regiment or a division. The distribution of vulnerable individuals is similar in all organizations and does not explain the disproportionate incidence of psychiatric breakdown. Another factor must be present. This can only be due to the influence of the group or combat unit which can offer realistic protection against external fear. The individual does not fight alone - around him are his buddies who share his dangers and deprivations and will aid him if he is disabled. The more confidence he has in his platoon or company the less fearful is the battle situation. When men fight together and share common tribulations, they become bound by the closest of emotional ties. This affection, which is akin to love, serves to lessen concern for one's own life, thereby decreasing the crippling subjective sensation of fear. That such an emotional bond is common has been repeatedly demonstrated by numerous instances where individuals have unhesitatingly performed dangerous and heroic deeds to save their friends. The grief reaction of a man who loses a buddy in combat is only comparable to the mourning over the loss of a loved one. The close kinship of man forged in battle is responsible for instances where soldiers prematurely leave the hospital or a rear assignment to rejoin their comrades.

Group identification begins in training. Here the soldier gains not only competence and confidence in the use of his weapons but also learns the value of team work in battle: the foundation for the protective functioning of the unit. Where additional training is given to the new replacement by the com-

bat unit, it serves, rapidly and effectively, to integrate him into the group. Such a training policy for new replacements has been successfully adopted by divisional units in Korea when the tactical situation permitted. This acts as additional environmental support often needed by susceptible individuals to prevent an early breakdown in battle.

Even the timid soldier comes to feel secure by being in a powerful group and often assumes the aggressive attitude of the organization. The unwilling person with little internal compulsion for hazardous duty is literally forced to adopt the higher standards demanded by his fellow-soldiers. The combat unit develops its own special characteristics which are quickly adopted by the new replacement; after a short time he talks and acts like any veteran member. In brief, the group offers protection against fear to the soldier and provides for his emotional needs, but demands that he give up personal desires and selfish considerations. In its simplest form, group identification is a matter of "united we stand, divided we fall."

The ability of a combat unit to achieve tactical success and to sustain its constituents against emotional breakdown is entirely dependent upon its leader. Napoleon's dictum "there are no bad soldiers, only bad officers," points to the crux of the problem of morale and combat effectiveness. Because the company grade officer lives in intimate contact with his men he plays a vital role in their motivation and group spirit. This officer is figuratively and literally a father figure. Like a good father he cannot be over-indulgent, but he must have a personal concern for the comfort and welfare of his men. Such a leader sets the standard and motivation for his organization by example and behavior. The poor combat leader is quickly recognized by his men for inapt tactical management, unfair treatment, and a callous disregard for their comfort and safety.

A member of an adequately led combat unit has an increased resistance to mental breakdown because of the emotional and actual support provided by the group. The failure of such an environmental support is the major cause for most cases of combat exhaustion. It explains the difference in psychiatric rates for various units. However, there are exceptions even in a well-led combat unit when unavoidable battle episodes occur and heavy casualties are suffered. The protection of the group is suddenly weakened or destroyed. It is at this time that psychiatric casualties may occur from the more susceptible members of the unit when they are left to face their danger alone. There are also occasions when the death or other removal of a combat commander may cause a disruption of the group, with consequent mental breakdowns, especially if a new leader, a platoon sergeant, for example, does not arise promptly to assume command.

A minor but pertinent cause of combat exhaustion is a lowering of the physiological state of the body. This occurs when men go without food and sleep for many days, or may be produced by such intercurrent diseases as malaria, diarrhea, and hepatitis. A decrease in physical ability to function adequately makes it difficult for the soldier to continue his aggressive adaptation and to control subjective sensations of fear. If not corrected, it may operate as "the straw that broke the camel's back" in its action as a precipitating agent to produce combat exhaustion. Unit commanders are well aware of this problem and attempt to insure periodic rest from combat with an

opportunity to obtain hot food and sleep. Often the unit commander and the battalion surgeon act together to give particular individuals a 24 hour rest period at the aid station or some other suitable location.

The prevention of combat exhaustion must lie in the province of command. The medical officer has no inoculation against the virus of fear; moreover, it is impossible to select only mature, aggressive and well-motivated men for combat duty. The measures that will sustain the soldier from an emotional breakdown are identical with those required for a good tactical unit. The selection of capable combat leaders and the initiation and maintenance of group morale and motivation are the logical and profitable means of preventing the soldier from being overcome by battle stress.

The prevention of psychiatric casualties is a relatively simple process compared to treatment after the individual has suffered a mental breakdown. This can be done effectively and rapidly when the causes of combat exhaustion are understood and if there is a proper appreciation of the role played by the primary and secondary gain in illness. The primary gain in illness is readily recognized when one considers that sickness confers a gain of being helpless with an honorable reason for not fulfilling adult obligations. This explains the euphoria of soldiers who receive a non-serious battle wound. It accounts for the phrase "million dollar wound" which in effect places the individual in a privileged status of being unavoidably removed from the difficult and dangerous job of a combat soldier. It is only after recovery from such a wound, when the individual is ready for discharge from the hospital, that tension and anxiety appear coincident with the removal of the advantages of illness. Any type of disease may provide an element of primary gain for the patient. This is equally true in civilian life where sickness is the best excuse for remaining away from work or onerous tasks. The psychiatric casualty also achieves a primary gain from his illness. Hysterical blindness and paralysis on the battle field duplicate disabling conditions and force the environment to remove them from the stressful situation. It should be emphasized that in wounds, diseases and most cases of combat exhaustion, the primary gain in illness is unconscious and not sought for directly by the individual. However, when the soldier uses the same symptomatology to avoid return to combat or to prevent assignment to non-combat duty, we note the phenomenon of the secondary gain in illness. It is an attempt by the individual to retain his patient status by the utilization of a similar pattern that produced the primary gain. This is demonstrated by the wounded soldier who upon recovery continues to have pain about the site of injury or operation and the psychiatric casualty who maintains his tremor, headache and tension even though quite removed from battle. The longer that patient remains away from his unit, in time and distance, the more vulnerable does he become to the fixation of secondary gain. He is removed from the sustaining influence of his organization and is no longer motivated by their attitude and standards.

The awareness of the factors of time and distance in the gain in illness mechanism can be effectively utilized in the treatment of combat exhaustion particularly if that illness is viewed as a temporary disruption of the protective powers of the group or a lowering of resistance of combat stress by physical factors. In actual practice the acute psychiatric

casualty is readily salvaged, if after a period of relief from mental and physical stress he is promptly returned to his organization. This return contains the emotional support required to aid him in resuming his previous self-control. A treatment program which involves a 2-4 day period of rest and rehabilitation within the division area has the advantage of keeping the patient near his group where time and distance is not sufficient to permit the transition from primary gain into chronic secondary gain habits. Severe cases of combat exhaustion however, must be evacuated to rear hospitals and given a more prolonged relief from battle. This is especially true when individuals have been in combat for many months and have lost most of the members of their original group. At this rear level of treatment it is sound therapeutic management to return the patient to some useful non-combat job as soon as possible in order to circumvent the buildup of secondary gain symptoms, and to give the individual an opportunity to feel that he is still an effective member of the Army. After several months of a rear assignment, the former combat soldier often is ready to return to his original organization. Even the most serious cases that are evacuated to Japan are salvaged for effective non-combat duty by psychotherapy. This form of treatment insists that what has happened to the patient is a rational and logical series of events; that he cannot cling to the helpless state that originated in battle and that the overcoming of the neurotic mechanism is imperative to prevent a fixation of symptoms which would occur if he were returned to the ZI. Such further evacuation

tends to place an additional burden upon the patient in that he must continue to have symptoms in order to explain to himself, his friends and family the reasons for his failure. If the pattern of secondary gain is repeated often enough the individual is rendered helpless for subsequent useful activity and there is produced the well-known querulous, irritable, neurotic war veteran.

What has been stated above in regard to the prevention and treatment of combat exhaustion can be applied with equal force to the emotional breakdowns in non-combat units whether they be located overseas or in the ZI. The factor of group identification which sustains the individual against the deprivations and vicissitudes of the environment operates in an identical manner in non-combat organizations. Here also, leadership is of equal importance in the maintenance of unit morale as it is in a combat organization. Similarly the treatment of psychiatric patients from non-combat units should be based on the principle of therapy near the location of origin, thus limiting the gain in illness.

SUMMARY:

Combat exhaustion is due to multiple factors, the most important of which is a decrease of the environmental support provided by the group or combat unit, permitting the soldier to be over-whelmed by external danger. The recognition of this concept facilitates a more rational application of the methods that can be employed in the prevention and treatment of this disorder.



X. MALARIA IN KOREA

Consultants Division, Medical Section, GHQ, FEC

There are four species of malaria generally recognized as infecting man throughout the world. These are: Plasmodium vivax or tertian; Plasmodium malariae or quartan; Plasmodium falciparum or aestivo-autumnal and Plasmodium ovale.

It is highly probable that one type, tertian, caused by P. vivax, will be the cause of the great majority of cases of malaria among U.S. personnel in Korea. This prediction is based upon the following: (1) It was the only species encountered in the survey of parasitic diseases made in Korea in 1948¹; (2) Japanese scientists who have lived and worked in Korea for about twenty years report considerable P. vivax, rare P. malariae and no P. falciparum (except 18 cases, believed to have been in drug addicts¹). P. ovale is so rare it was not even mentioned or considered by the Japanese workers; (3) P. vivax was the only species confirmed by laboratory examination of blood smears from troops in Korea².

During the summer and fall of 1950, a number of cases of malaria appeared among members of the UN forces in Korea despite the fact that chloroquine was administered routinely to the troops as a suppressive. It should be borne in mind, however, that the drug was probably not available at times, and in some instances the men may have been careless about taking it.

It is extremely important for all medical officers in Korea to be completely familiar with the Eighth Army malaria control program. It is their responsibility to stress continually the need for the application of strict malaria discipline including unit and individual protective measures.

An important measure for individual protection is the administration of chloroquine for the suppression of malaria. This drug is less toxic than atabrine when given in proper doses and produces more rapid symptomatic relief when used for treatment. The drug is colorless and produces no discoloration of the skin. Objectionable side effects have been few and none have been cause for concern. Pruritis without rash has been the only symptom observed with any significant frequency and this is reported to occur in less than 10% of treated patients. Other symptoms noted rarely have been anorexia, mild nausea and vertigo. No reports of the occurrence of these side effects from the use of chloroquine were received in the Office of the Chief Surgeon during the 1950 malaria season.

While not a true prophylactic, chloroquine has been shown to be very effective in the suppression of malaria. When used for this purpose, the dose is one half (0.5) gram once a week. It is emphasized that the use of suppressive medication does not obviate the necessity for strict malaria discipline, both by units and individuals, or for the application of procedures for mosquito control.

TREATMENT:

a. Routine Therapeutic Regimen

1. Camaquine (SN 1075)

This 4 aminoquiniline drug is effective in a single dose of 10 mg per kg of body weight. Also as the quiniline nucleus is broken the degradation products are toxic to the plasma. A relapse rate of 1 to 5% has been reported with this compound.

2. Chloroquine

The following schedule is recommended by leading malariologists. Initial dose upon confirmation of the diagnosis - one (1.0) gram followed by one-half (0.5) gram in six (6) hours; then one-half (0.5) gram daily for each of two (2) successive days. Total dose 2.5 grams in three (3) days.

b. Cerebral Malaria

Quinine Hydrochloride 0.6 gm (in saline) slowly by vein every hour for three (3) to four (4) doses. When improvement is apparent and patient can swallow, give 0.6 grams every four (4) hours.

c. Relapsing Malaria and Exoerythrocytic Infestation

Quinine Hydrochloride or
Sulphate - 0.6 Gm) q6h for 14 days
Pentaquine 0.01 Gm)

Because of the toxicity of Pentaquine and eight Amino-quiniline compounds, all patients treated by this regimen should be hospitalized. Methemoglobin may occur and the clinician should be on the alert for evidence of toxicity. All attendant personnel should be warned about the administration of Sulfa drugs or Atabrine while patients are on this regimen, as both of these compounds will greatly increase the toxicity.

Chloroquine diphosphate, a standard medical item is listed in the Armed Services Catalog of Medical Material under Stock Nos. 1-139-290 (bottle of 100s) and 1-139-300 (bottle of 1000s), Chloroquine-diphosphate tablets, 0.5 gm. ($7\frac{1}{2}$ gr.): Equivalent to 0.3 gm. of base.

Camaquine (SN 1075): A non-standard preparation will be available in the Far East Command in bottles of 100 and 1000 tablets by mid-June.

Pentaquine - 0.01 Gm Tablets: Has been ordered and should be available for distribution by about 1 July.

REFERENCES:

1. Hunter, G.W. III; Ritchie, L.S.; Chang, J.C.; Kobayashi, H.; Rolph, W.D. Jr.; Mason, H.C. and Szewczak, J., MS. Parasitological Studies in the Far East. VII. An Epidemiological Survey of Southern Korea.
2. Annual Historical Report, MS. 1950 Report of the 406th Medical General Laboratory (In Press)



XI. EXPERIENCES WITH THORACIC WOUNDS IN A MOBILE ARMY SURGICAL HOSPITAL

Major Gerald E. Blanchard, MC, Chief of Surgery, MASH, 8055th Army Unit, APO 301

From the date that the 8055th Mobile Army Surgical Hospital went into operation in Korea on 6 July 1950 until 12 March 1951, 102 cases of thoracic wounds with intrapulmonary damage have had surgical intervention. Experience has

shown that the early tendency towards open thoracotomy by the surgeons was unnecessary and that routine closed intercostal drainage by the waterseal method was superior. From 6 July 1950 to 6 October 1950, 11 cases received open thoracotomy and 25 closed thoracotomy. From 6 October 1950 to 12 March 1951, 66 thoracic wounds have been operated upon with only 9 of these receiving open operation.

At present patients with thoracic wounds entering this hospital are seen immediately in the receiving ward by a medical officer who checks each patient's general condition. Those cases in shock are given whole blood and nasal oxygen before being further disturbed. The external chest wound is examined and those which are "sucking" are occluded by vaseline gauze and pressure dressings. Clinical examination of the pulmonary status is recorded and chest x-rays are taken. Frequently, the condition of the patient requires that supine AP and lateral films be taken rather than the more desirable upright examination. The patient is then sent to the pre-operative ward where a thoracentesis is per-

formed if the case exhibits marked mediastinal shift and dyspnea and cannot tolerate the delay before operation. Premedication for operation usually consists of demerol and atropine.

In the operating room the patient is anesthetized, endotracheal GOE being used for open thoracotomy or cases with an associated intra-abdominal lesion. Most closed thoracotomies are performed under light pentothal and nitrous oxide; however, about 10% of the cases are done with local infiltration of 2% procaine. Sucking wounds are debrided and an attempt is made to close the parietal pleura and fascia primarily. Subcutaneous and skin closures are not used as a primary procedure at this installation. The intercostal catheters used are a firm rubber tubing with a minimum internal diameter of one-fourth inch. The catheter is inserted in the 6th or 7th intercostal space in the mid-axillary line and connected to a waterseal. The blood loss through the tube is recorded for purposes of replacement therapy. Closed thoracotomy is routinely performed first in combined thoraco-abdominal injuries. Open thoracotomies are usually performed through intercostal incisions rather than the more time-consuming rib-resection technique. Operation is confined to suturing lacerations of the lung, infrequent wedge-resections of severely damaged lung or simple control of major vessels. A few combined thoraco-abdominal incisions have been used where indicated and have proven quite successful

and time-saving.

Post-operatively the patient receives supportive therapy and any continued output of blood is closely observed. Where the loss is persistent through the catheter the patient is returned to the operating room and an open thoracotomy performed and the bleeding controlled at its source. Broncho-pleural fistulae have always closed spontaneously with the conservative procedure. Ordinarily it is found that the catheter can be removed in 48 hours and the patient is ready for evacuation to the next medical installation.

In a mobile unit such as this, thoracic injuries have recovered more rapidly with the described treatment. Ideally, it is admitted that many patients with closed thoracotomies could well have received only repeated thoracentesis but the medical personnel have insufficient time for such treatment when the flow of casualties is high. Mortality rates with the two procedures, open versus closed, reveal an expected

lower rate with the latter. Rates in this installation are not true since the observation period is limited to the short time before evacuation which is about four days. There have been five deaths in twenty open cases and six deaths in eighty-two closed cases. These deaths do not reflect an accurate cause since four of the five cases in the first group had associated intraperitoneal injuries and four of the six in the latter group had similar lesions.

The long-term observation and results with the thoracic injuries is beyond the scope of this organization but it is hoped that these patients have a minimum of pulmonary complications and will thereby be more readily available for an early return to duty.

(EDITORIAL NOTE: Attention is invited to the article by Major A. R. Valle, MC, in the May 1951 issue of the SURGEON'S CIRCULAR LETTER and to TB MED 147 on the treatment of chest injuries. Simple repeated aspirations of hemothorax are recommended.)

XII. NOTES ON DENTAL MATERIALS

Colonel Harold G. Ott, DC, Dental Surgeon, GHQ, FEC

Progress reports on several dental research projects which the Department of the Army is supporting have recently been made available for the information of the various sponsoring agencies concerned.

While final conclusions and publication of results must await further work in the problems being investigated, it is believed that some of the developments to date will be of interest and benefit to dental officers in the Far East Command. A resume of the preliminary data, therefore, is given herewith.

SELF-CURING RESINS FOR DENTAL RESTORATIONS:

Investigations conducted to date indicate that a shrinkage of approximately 6 to 8 per cent occurs during the first thirty minutes of polymerization of these resins, a volumetric change about 4 to 6 times greater than that observed in silicate cements. In general this shrinkage does not occur uniformly throughout the resin, but is greatest on the surfaces where there is the least restraint. This indicates that perhaps the most important single factor in the proper use of these resins is in the maintenance of adequate pressure on the matrix strip throughout the entire initial hardening or polymerization period of the resin. This period varies from 4 to 16 minutes depending upon the brand of resin used. While the initial hardening process for self-curing resins is very rapid as compared to denture base resins, and at much lower temperatures, complete polymerization does not occur for some time, due to the plasticizing action of the residual monomer. This is an important factor and may account for some of the failures evidenced by poorly adapted margins and displacement during finishing. Observations on the residual monomer content indicate that, to avoid failures from this source, it is essential that finishing and polishing be delayed for a period of at least 6 (preferably 24) hours after insertion of the restoration.

The temperature rise which occurs during the polymerization process was found to be of negligible magnitude in the type and size of restorations most com-

monly used, and therefore presents no thermal hazard so far as the pulp is concerned. The primary cause of excessive porosity has been determined to be the entrapment of air during the mixing process. For this reason, a prolonged mixing period should be avoided -- contrary to the directions of some manufacturers.

It is of interest to note that the low modulus of resistance to deformation, particularly edge strength, of self-curing acrylics, is less than that of well-cured denture base resins (methacrylate). In view of this, these materials, in the present state of development probably leave much to be desired in dependability. As a result of the work thus far accomplished the following general principles have been formulated as a guide to the proper use of the resinous filling materials now on the market:

- (1) The cavity preparation requires greater care because of the plasticity and excessive shrinkage of resins. The undercutting should be more rounded and more pronounced to permit the resin to flow into these areas and to assist in attaining directional placement of the shrinkage.
- (2) Mixing must not be continued after the resin has attained a stick-stringy consistency, or large amounts of air will be incorporated in the mix, causing abnormal porosity. No difference in properties was noted between resins mixed on a glass slab and those mixed in a closed jar.
- (3) Zinc oxide-eugenol cement cannot be used, as the eugenol prevents polymerization of the resin. Phenol has the same effect.
- (4) Care should be exercised to use a matrix material which is not chemically attacked by the resin. Otherwise the restoration is likely to be pulled out of the cavity when the strip is removed.
- (5) The most important single requirement to ensure good marginal adaptation and to prevent porosity is the maintenance of adequate pressure on the matrix strip during the hardening cycle. The length of time during which pressure must be maintained varies according to the setting time of the material used, being greater for the slower setting resins. It should never be less than

five minutes, even for the resins which set most rapidly, and may be as much as 15 minutes for the slower setting brands. Because of the necessity of maintaining uninterrupted pressure for such prolonged periods of time, some type of matrix retainer is essential.

- (6) After removal of the matrix strip, only the gross excess of material that interferes with comfort should be removed. Final finishing should be delayed for six or more hours.
- (7) It is not necessary or desirable to coat the restoration with a varnish or grease as is done with silicate cement.
- (8) Care should be exercised to prevent overheating the material during finishing.

PLASTIC TEETH:

Experiments thus far conducted seem to indicate that there is an inherent relationship between the crazing of acrylic teeth and their ability to resist deformation; i.e., absorb energy from external application of force. It has been definitely established that crazing is associated with water sorption which, in some manner, introduces strain into the surface layer of the tooth. Microscopic porosity, therefore, may be a factor.

A successful chemical bond between plastic teeth and denture base resins seems to be definitely predicated upon the elimination of all traces of wax. Of all methods and solutions tested for complete elimination of wax, the slightest trace of which is sufficient to preclude a chemical bond, a 2% solution of a modern detergent such as Dreft, Tide, etc., in hot water was found to be the safest and most completely effective. The major portion of wax should be removed by warming the mass and withdrawing it in one piece. The hot detergent solution then should be poured over the mold and the mold rinsed with clean hot water. The common practice of placing the flask in boiling water or water containing a detergent is not satisfactory. The clean boiling detergent solution must be poured over the flask and then discarded, and the solution flushed off with clean boiling water.

DENTURE BASE RESINS:

Studies are in progress to determine the effect of catalytic agents and other factors affecting polymerization of methyl methacrylate but the findings thus far are highly technical in nature and have no practical application at this time.

A new group of low-temperature curing acrylic resins which polymerize at room temperature have recently been offered to the dental profession. These are being investigated for physical properties, processing characteristics and clinical behavior. If found satisfactory, they will offer many advantages over present materials, particularly for the Armed Services, because of the saving in both time and equipment. Some of the possible advantages foreseen in the use of these resins are:

- (1) Elimination of curing units and temperature control devices.
- (2) Elimination of the need for tin foil and tin foil substitutes.
- (3) Crazing and blushing of both the denture base and teeth would be minimized if not entirely eliminated.
- (4) More accurate reproduction of the model.
- (5) Simplification of the overall technique of denture processing.

Some of the difficulties which may be encountered in the use of these materials are:

- (1) Incomplete polymerization of the resin and presence of residual monomer.
- (2) Discoloration of the denture due to decomposition of catalytic agents needed to accelerate cure.
- (3) Excessive porosity.
- (4) Necessity of devising new fabricating techniques because of shorter duration of curing cycle. (Trial packing difficulties, etc.)

ALGINATE TYPE IMPRESSION MATERIALS:

Experimental work on alginate impression materials shows that the major gel-forming constituent, sodium alginate, definitely deteriorates at elevated temperatures. These findings indicate the absolute necessity for storing these materials at temperatures well below 50°C. Erratic behavior of alginate impression materials in tropical areas may be the result of deterioration caused by storage at elevated temperatures.

EDITORIAL NOTE: Additional information for NOTES ON DENTAL MATERIALS is being prepared by Colonel Ott and will be published in the July 1951 issue of the S.C.L.

XIII. USE OF PRESERVED WHOLE BLOOD



The 406th Blood Bank supplies whole blood to medical depots in Korea and to installations in Japan concerned with the treatment of battle casualties. Such blood is labeled to indicate major group, Rh factor, date of expiration, serology, and titer of agglutinins in the case of "O" blood.

Only group "O" blood is supplied to medical units in

Korea. Whenever possible in such installations the

suitability of a specific unit of blood for a particular recipient should be determined by cross-matching, but when this is impossible due to emergency conditions in field medical installations, group "O" blood may have to be given as an emergency life-saving measure. Only meager authoritative information is available concerning the utilization of group "O" blood of high antibody titer but in general, and when feasible, such blood of high titer should be given to recipients who are themselves members of group "O". Low titer group "O" blood should be reserved for individuals of groups "A", "B", and "AB".

While thorough check to avoid Rh incompatibility

would be desirable, in most instances determination of Rh type of recipient is not feasible in field medical installations in the combat zone. Fortunately, an extremely small percentage of Rh negative males will have been previously sensitized to the Rh factor, hence the chief damage will lie in sensitization of the Rh negative individuals who are given Rh positive blood. Even in such circumstances approximately only one person in every 25 instances will exhibit any evidence of sensitization. In those soldiers who have previously received blood and may possibly have been sensitized to the Rh factor, administration of Rh positive blood may still serve as a life-saving measure in emergency conditions since the reaction to such transfusion is usually a delayed hemolysis. Accordingly, the necessity for determination of Rh type in recipients can be disregarded under field conditions. Entry should be made, however, on the field medical record of the

specific group and type of blood administered.

Medical installations in Japan receiving battle casualties requiring further transfusion will be expected to determine the major blood group and Rh type of recipients to allow administration of compatible blood. Cross-matching of blood will be a requirement in all such installations. Blood according to specific group and type will be obtained from the 406th Blood Bank.

Although preserved whole blood can be kept satisfactorily for use for a maximum period of 30 days, the expiration period of preserved blood at the present time is set at 21 days. Visual examination will be made of all blood drawn more than 10 days prior to use for evidence of hemolysis as indicated by pink staining of the overlying plasma. Evidence of marked hemolysis (deep red staining of plasma) will warrant destruction of such a bottle of blood.



XIV. EIGHTH ARMY MEDICAL SERVICE IN KOREA - PRISONER OF WAR HOSPITAL
Lt Colonel F. D. Minerva, MC, CO, 3rd and 14th Field Hospitals, APO 59

The Prisoner of War Hospital, like Topsy, just "grew", patterned according to the needs and requirements of the Geneva Convention in amelioration of the vanquished enemy. Unlike Topsy, however, it grew rapidly from

a very humble start in late September, 1950, when the first prisoners of war began to arrive, to possibly the largest recorded hospital in the world by January 1951.

The enemy, well indoctrinated in merciless warfare, did not expect or demand compassion or medical care. Data obtained through interpreters for medical records invariably followed a given pattern: all were privates, school boys or farmers from the Seoul and Taejon areas, impressed into the service by the North Korean communists in August or September, and were captured two weeks later. As the results of medical treatment became evident, fear diminished and a surprising number of all grades and ranks became unearthed. A surprising number spoke good English, and a number could speak fluent English without a trace of accent.

During the early operation of the hospital, it became evident that human wastes must be disposed of by burial. Twenty PW laborers were assigned to the detail and marched outside the confines of the hospital guarded by two medical soldiers armed with carbines.

During the course of the digging the prisoners were very quiet and solemn, exchanging a few low remarks and working very slowly and methodically. It was such a slow process that the NCO in charge was inclined to give up in disgust. After about 4 days of labor a 10x10x10 hole finally was completed. As the detail was preparing to start another hole the sanitary truck drove up and emptied its load. The reaction of the prisoners was unusual - several laughed hysterically and rolled on the ground; others laughed loudly and pounded each other on the back. The prisoners had thought all along that they were digging their own graves and would be executed as

they had been told by their leaders. Needless to say, the same detail dug the same size hole in one day instead of four thereafter.

Surgical Service: Surgical as well as humane treatment given to the POW patients so far exceeds their expectations and previous standards that they express amazement. Once these patients realize that the effort here is no longer toward destruction but rather toward reconstruction, they become very cooperative. When surgery is deemed advisable, the problem is made known to the patient. The rare one who refuses is called "stupid" and severely rebuked by his wardmates. The patients in general are quite grateful and many at the point of discharge have become quite valuable as helpers due to their cooperative attitude. Many of the POW doctors have been utilized in their professional knowledge and, in addition, have been further trained by the U. S. staff. Their appreciation for such attention is expressed by these doctors in every manner.

In general, the professional demand has involved practically every branch of surgery. Pre-and post-operative care has in many cases been, of necessity, heroic. There have been large numbers of traumatic chest and abdominal war wounds which demanded much attention. Bowel resections and thoracotomies were frequent and the results gratifying. Extremity wounds created the demand for a tremendous amount of orthopedic work involving casts, debridement, curettage, as well as bone plating and a few grafts. Osteomyelitis has been a problem of prime importance in that such damage had developed prior to hospitalization in this institution. Chemotherapy in such condition has been to little avail, although prolonged immobilization with adequate mode of drainage has caused some optimism as to future rehabilitation of such patients suffering from this disease. Injury to extremities has also created the necessity of not infrequent aneurysm explorations due to vascular trauma. The large percentage of these aneurysms have been repaired with small silk sutures either single or figure-of-eight. The few ligations have been due to transection of the involved vessel with large defects. One A-V fistula has been operated with two pole ligation of the vein and repair of the artery (femoral) with interrupted silk sutures. Results were excellent. Peripheral nerve explorations

with neurorrhaphy and neurolysis have been a major problem. Results in this phase of surgery have not been calculated due to the short time interval.

Frostbite was a major problem during the winter. The ultimate in conservation was followed. Many recovered following sloughing of skin areas though many amputations were necessary. Healing of amputation stumps was excellent and rehabilitation of patients within reason.

Causalgia secondary to gunshot wounds and shell fragment wound was controlled by para-vertebral blocks and when necessary, sympathectomy and/or peripheral nerve exploration. The cases of tetanus and few gas gangrene seen were treated by standard methods and many recoveries seen.

For some unknown reason the patients enjoy receiving intravenous fluids. Probably they think there is some wonderful medicine in them, and when they are in a ward they become very upset if they do not receive an IV when the other patients do.

A visit to the post-operative ward in the huge United Nations POW hospital would be indeed an unforgettable experience. Nearly 100 newly operated prisoners lie quietly on their cots, with an occasional moan of "aper-aper," (Korean for pain) or a more piercing "Igo-Igo (severe pain). Some are receiving intravenous fluids, a few blood transfusions. The Wagenseen suction is improvised from 3 Baxter bottles and a few pieces of rubber tubing. Korean doctors and nurses change dressings, do irrigations and give baths. The baths are given against the better judgment of the patients; they think it weakens them.

Orthopedic Section: Patients arrived dirty, tired and frightened last fall; now they arrive dirty and tired, but much less frightened. One of the early group of North Koreans stated through an interpreter that he expected to be shot. The only "shots" he got were penicillin, tetanus antitoxin, two photographs and vaccination. Very shortly the fear is gone and the usual oriental complacency prevails. They respond normally to treatment and in general are very appreciative. Of the large number of orthopedic cases which have come to surgery almost none have needed morphine for pain. The Koreans bear pain quite well, better than the Chinese. The Chinese are more like Americans in that they are more demanding of personal attention. They have quite a sense of humor, respond well to gentleness. Only a few are sullen or unresponsive.

Patients who needed amputation were told prior to surgery. Many cried but were happy afterwards when relieved of pain and infection and were in association with fellow amputees.

Administration of medicines had to be supervised since pills were accumulated and used for gambling and trading - a sort of medium of exchange, among themselves, for food, clothes and cigarettes.

Patients react to casts in a strange manner. They think at first that casts are put on to punish them, but after having it explained many times and seeing other patients receive good treatment they accept them. Once in a while a patient will remove a body spica because he wants his pants on....modesty is doubted; there must be some other reason all his own.

Medical Service: The opportunity of being associated with a Prisoner of War Hospital in Korea surpasses the fondest hopes of a true professional man. Here

in an area of approximately 30 acres, is concentrated every form and description of disease. That is to be expected where the patient load is drawn from a group which has been subjected to the rigors of war and privation.

In daily rounds on the Medical Service, one is impressed by the high standard of treatment the patients receive. All of the latest antibiotic and chemotherapeutic agents have been used to the extent available to treat the disease which we see. Intravenous fluids and plasma were also available. The medical officers are constantly on the alert for serious cases, and those are given priority in treatment. The most gratifying thing is the response by the patients. Not once, but hundreds of times have hands been grasped as a patient gives thanks for our kindness in getting him well.

The medical service has seen many and varied diseases. It has seen and treated more cases of *Paragonimus Westerni*, (Lung Fluke), than have previously been recorded in medical literature. Cases of typhus, smallpox, relapsing fever, cirrhosis, pneumonia, tuberculosis, typhoid and paratyphoid fever, amoebic and bacillary dysentery, neoplasms, nephritis, tetanus, nutritional edema, acute and chronic rheumatic heart disease, congenital heart disease and many other diseases too numerous to mention have been admitted and treated. All types of intestinal parasites and complications brought on by each have been observed.

Tuberculosis cases are separated from the remainder of the hospital and fall into all categories, minimal, moderately advanced and far advanced. They receive treatment on or above par with that in all of Korea. On selected cases pneumothoraces are done, and in the planning stage now in surgery both phrenic crush and thoracoplasty are contemplated in selected cases.

The medical laboratory has grown from its inception in a small corner room in an unoccupied part of the hospital to an entire prefabricated building where almost any laboratory procedure can be done. The output at the present is phenomenal. With six enlisted men and some Korean civilian assistants during the month of March, 1,408 stool examinations, 2,240 sputum examinations, 1,167 urinalyses, and 850 blood chemistry examinations were done. The figures speak for themselves and nothing more need be said.

Dental Service: The majority of the dental ward patients have compound comminuted fractures of the mandible or maxillae or both, and almost every case is complicated by severe infection when admitted. Therefore, osteomyelitis and cellulitis present the greatest problems in their treatment. Antibiotics and heat therapy are started immediately on admission and continued or modified as necessary. Chronic osteomyelitis cases are kept draining as needed. Sequestra are removed as they are shown to be separated from the involucrum of new bone by clinical and radiological examination. Tooth roots and fragments and other foreign bodies acting as foci of infection are removed. Conservation of the maximum amount of bone and soft tissue and restoration of function are the constant aims in treatment of these wounds, injuries and diseases.

Treatment is well received and appreciated by most of the prisoner of war patients in the dental section. Recently captured new admissions usually show extreme fear, but they soon understand that they are not going to be mistreated and that the hospital staff is

working for their benefit and healing. The language barrier is one of the principal difficulties encountered, as some fallacies in taking histories and interpreting symptoms occur in working through an interpreter. Also many times patients do not understand instructions on therapy and personal care of their disease or injury and this reduces the effectiveness of the professional treatment they receive. Superstition and ignorance about dental infection is difficult to overcome in many cases. Most cannot understand the value of preventive therapy but are only interested in relief of pain and ability to eat.

The highlights incident to hospitalization of prisoners of war are numerous. The much vaunted oriental mind appears to respond to the same stimuli as the occidental mind. The preponderance of patients being of the coolie or agrarian casts, much superstition is evidenced in the acceptance of treatment. Bathing is considered ill-advised during illness; the frequent tom-tom beats in the night are to drive evil spirits of sickness away.

The organization of the Hospital proper conforms to standards prescribed for medical department hospitals, but the organization of the individual compounds differ in that the battalion type administration for control purposes is maintained. Through trial and error it has been determined that ward sections of approximately 300-500 patients is the optimum for efficiency. A compound consists of 4 or more of these sections, each section commanded by an American NCO. Compound Commanders are Ward Officers and/or MSC Officers when available. Each compound is, in effect, a General Hospital with the Hospital proper acting as a Hospital Center. Admission and Disposition Sections of each compound comprise holding tents where all admissions and dispositions are cleared by Ward Officers. Each compound has a Rice Kitchen. Orthopedic and TBC compounds have their own x-ray units. The compounds are staffed by American doctors and nurses according to types of cases housed - in general two doctors and two nurses per compound. In the professional section one American soldier, either in a command capacity or as a technician, is allotted per 100 patients. Augmentation of the staff for efficient operation of the hospital is completed by either POW or indigenous help at a ratio per 100 patients as fol-

lows: 4 physicians, 4 nurses or nurses aides, 1 interpreter and 10 aid men. The available POW professional personnel are utilized to the maximum extent consistent with security.

In general, cases admitted fall into set patterns and percentages with seasonal variations. Normally patients admitted consist of approximately 60% medical, 40% surgical. Of the total medical cases admitted 50% fall into the gastro-intestinal group, 40% pulmonary tuberculosis and 10% miscellaneous such as typhus, smallpox, leprosy, lung flukes, etc. During continued inclement weather, the upper respiratory infections and unclassified diarrheas and dysentery have exceeded 90% of all admissions and involved expansion of facilities in like proportion. The surgical cases consist of wounds, frostbite, fractures of extremities, maxillo-facial wounds and injuries, napalm burns, and miscellaneous acute surgical conditions. Head, abdominal and thoracic wounds or injuries arrive in negligible numbers compared to the overall admissions.

The Korean diet under normal conditions consists of strong condiments such as pepper and onions in large quantities as well as Kimchi (potent fermented foods similar to sauerkraut) in the winter. Deprived of these condiments the patients crave for pepper in any form, as well as salt in unusual quantities. The available and approved diet furnishes .4oz of salt per patient a day and negligible amounts of pepper. Rice is a fairly stable issue item (1 lb. per day) with vegetables, bean sprouts, fish (5 oz. a day) and sea weed bringing the total weight to 1.9 lbs. per day.

The average prisoner of war is more interested in the quantity, rather than the quality, of the food eaten. A protuberant abdomen appears to be the criterion of being well fed.

A Chinese patient refused to eat for several days. When an American nurse inquired "why," he stated that he had been promised steak and mashed potatoes when he was captured and that he had been in the hospital two months without receiving either so he was registering his disgust at the situation by going on a hunger strike. It is highly improbable that steaks were an old and taken-for-granted nutritional experience to him prior to his capture.

XV. THE ROLE OF THE PHYSICIAN IN EDUCATION OF THE CARDIAC PATIENT

The economic, social and emotional adjustment of the patient with heart disease is sometimes neglected by the private physician and the cardiac clinic. Every cardiac patient must successfully maintain a relationship with his family, his job, his environment, and at the same time live within the limitations of his cardiac capacity.

The first step in management of the patient with heart disease is evaluation of the circulatory status. The Criteria Committee of the New York Heart Association has established a standard nomenclature and criteria for diagnosis of diseases of the heart. This includes etiological, anatomical, and physiological diagnoses and the functional capacity and therapeutic classification.

The functional capacity is an estimation of the patient's ability to perform physical activity*. The therapeutic classification is the physician's opinion of the amount of physical activity the patient may safely do and is a guide in the management of the patient**. The functional capacity and the therapeutic classification are not necessarily the same.

This method of diagnosis and classification is an excellent starting point, but it does not go far enough. The entire life situation of the patient must be assessed in terms of his cardiac status. Often the physician's instructions are either inadequate or impossible to follow. Advice may range from "do everything" to "don't even lift an ashtray." Both statements are meaningless because they lack a frame of reference for the patient.

Patients with heart disease can and do work. Studies have shown that patients with a functional capacity

and therapeutic classifications up to and including III C have worked successfully for many years². The average patient appears to be limited more by his age, his emotional disturbances, and the lack of guidance than by his cardiac capacity.

The personality of the patient must be taken into consideration in discussing a detailed prescription for activity. An obsessive-compulsive type is apt to follow instructions over-meticulously and should be given leeway. The activity program for an individual who has a high threshold for pain and fatigue should be understated. The cardiac status and the physical restrictions should be minimized for a patient who is prone to fear and anxiety. The patient who is inclined to disregard advice and suggestions should be put on a specific regime.

During or immediately after an acute cardiac episode, such as a coronary occlusion, an attack of congestive heart failure, or a bout of acute rheumatic fever, a guarded short range program should be formulated. The patient must receive reassurance that this minimal activity program is only temporary. At this time, no definite predictions about future occupation, recreation, and family life should be made.

The physician's aim is to establish rapport and allay anxiety. The patient's reaction to the short range program serves as a guide in planning the long range activity program which is to be established after the cardiac status has become relatively stationary.

There is little necessity to explain the anatomy and physiology of the heart lesion in detail unless the patient so requests. When such a request is made, an analogy in terms of the patient's usual experience is best. A coronary occlusion may be related to a block in the feed line of a motor car. A car functioning on four cylinders instead of eight is a good analogy for a patient with valvular heart disease. Women do not inquire about the mechanics of heart disease as frequently as do men.

After recovery from the acute episode, an appraisal of the physical capacity should be made in terms of the patient's job and daily routine^{***}. Details about the cardiac status should be underemphasized in favor of details about energy expenditure on a job, traveling time to and from work, family life, hobbies, and recreation.

Frequently the patient may return to his former job either full-time or on a limited basis. If, in the opinion of the physician, a change of occupation is necessary, suitable jobs should be suggested. Referral to a rehabilitation agency for retraining or placement may be necessary. The local Heart Associations will furnish the names of agencies and training schools in their areas. In many communities, the United States Employment Service has a division for the placement of handicapped individuals.

Long range predictions about activity should not be completed in one session. A patient should not receive more information than he can comfortably assimilate at one sitting. At each visit one or two aspects of his daily living adjustment may be discussed. The frequency of regular check-ups may, in itself, be used as a therapeutic agent. An elderly dependent individual with arteriosclerotic heart disease needs frequent visits for reassurance and guidance. Such individuals may experience a feeling of rejection if given too long an interval between visits. A patient with inactive rheumatic

heart disease or a healed myocardial infarct, however, may receive a tremendous emotional lift when told that the intervals between visits may be lengthened. A young man with inactive rheumatic heart disease, mitral insufficiency and stenosis, regular sinus rhythm, classified as II B, should be encouraged to go about his business. Weekly or monthly visits to the physician will only prolong a feeling of invalidism and insecurity.

After a decision about occupation has been reached, the family life, personal habits, and recreational activities must be discussed in terms of the patient's cardiac status and functional capacity.

When outlining an activity program contradictory statements should never be made to the patient or to his family. Close relatives should be cautioned against nagging and overprotection of the patient. The family should be warned that attempts to force the patient into a regime he is incapable of following will do more harm than good.

The physician, by the same token, should not interdict any activity which the patient will be forced to continue despite the prohibition. Telling a II C cardiac patient who is the only support of a wife and two small children that he must not work, will only create problems. The patient is forced to return to work despite the physician's disapproval and the conflict between the advice and the actuality will produce anxiety. Environmental limitations and emotional concepts, such as attitudes towards pregnancy and sex, that cannot be changed, must be accepted by the physician and the family.

The housewife with heart disease presents a special problem. It has been shown that managing a household without assistance is the physical equivalent of a full-time industrial job³. The average woman with heart disease cannot be expected to stop housework completely. It is relatively easy, however, for her to limit her time and change her work methods so that the same results are obtained with a minimum of physical exertion. Practical ways of limiting housework should be pointed out by the physician. The booklet "The Heart of the Home" outlines methods of work simplification⁴.

The adjustment problem of the young man with rheumatic heart disease differs from that of the middle-aged or elderly person with hypertensive or arteriosclerotic heart disease. The young person, despite diminished cardiac reserve, looks to the future and can usually cope with changes in environment. He can be directed toward a permanent occupation in which he can limit himself when necessary and where his services will remain in demand. Arrangements can be made for training in new job techniques. His social and recreational habits can be changed without emotional trauma.

The middle-aged person with hypertension is often faced with the problem of the past. Drastic reorganization in his way of life is emotionally undesirable. He must be limited within the framework of his usual living standard. The same occupation, the same environment, the same recreational habits must be maintained, but limited as to time and energy expenditure.

If a cardiac is classified as possible and potential heart disease¹, or class I A he must be told emphatically that limitation of activity is not necessary.

If a patient is found to have an unexplained (functional) murmur¹, an unequivocal statement must be given that no heart disease is present; that a functional murmur is a normal phenomenon; that no physical limitation of any sort is necessary. The statement "You have a little murmur. It doesn't mean a thing, but be a little careful" may be dangerous and misleading.

If a patient has a cardiac neurosis a positive explanation is in order that there is no heart disease; that there need not be any limitation of activity; that the symptoms are not referable to the heart. Patients with a cardiac neurosis superimposed on organic heart disease are common. Physical capacity and work tolerance should be evaluated in terms of the symptoms due to the organic lesion. The patient must be advised that some of his complaints are due to anxiety about his heart and conflicts in his life situation rather than to a cardiac lesion. By reassurance and guidance the physician can often do much to allay anxiety and help the patient make a more comfortable adjustment.

At all times, the physician must guard against incomplete explanations, overstatement and understatement, and projection of unproven theories onto the patient. For example, a physician particularly interested in blood pressure fluctuations may make several determinations at each visit and never explain to the patient that there is nothing particularly unusual about his blood pressure. Overemphasis on one aspect of the history, physical examination, or laboratory findings tend to create anxiety unless adequate explanation is given. Discussion of one aspect of the heart disease with an associate in the presence of the patient, causes unnecessary fear and speculation.

Rehabilitation studies have shown that anxiety about the state of his heart is one of the chief factors which prevents cardiac patients from working. Work tolerance increases as anxiety is overcome⁵. The physician in his personal relationship with the patient can do much to prevent the development of anxiety.

SUMMARY:

1. The emotional, social, and economic adjustment of the cardiac patient is as much the physician's responsibility as the diagnosis and therapy.
2. Heart disease patients with a functional capacity and therapeutic classification up to and including III C can and do work. The physician must give advice about the amount and type of employment and recreation.

The proper management of the cardiac patient requires much of the art of the practice of medicine as well as great professional skill and mature judgment.

During and after World War II, many cases were seen in our military hospitals for cardiac evaluation. Numerous instances were seen in which the serviceman had developed

3. Expressed and unexpressed attitudes on the part of the physician or the family may cause the patient anxiety. These include: advice impossible to follow, blanket statements for or against activity, over-protection, nagging, over-emphasis on one aspect of the heart disease, and contradictory statements.

FOOTNOTES:

*Functional Classification of Patients:

- Class I: No limitation of physical activity
- Class II: Slight limitation of physical activity
- Class III: Unable to carry on any physical activity without discomfort.

**Therapeutic Classification of Patients:

- Class A: Physical activity need not be restricted.
- Class B: Ordinary physical activity need not be restricted but should be advised against unusually severe or competitive efforts.
- Class C: Ordinary physical activity should be moderately restricted and more strenuous habitual efforts should be discontinued.
- Class D: Ordinary physical activity should be markedly restricted.
- Class E: Complete rest, confined to bed or chair.

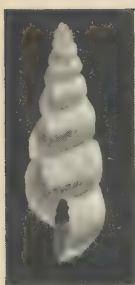
***A chart of physical capacity evaluation may be obtained by writing the New York Heart Association, 2 E. 103d Street, New York.

REFERENCES:

1. Nomenclature and Criteria for Diagnosis of Diseases of the Heart, New York Heart Assn., 4th Edition, New York, 1939.
2. Effects of Employment on the Course of Heart Disease, Staff of the Work Classification Unit, Circulation 3:289:1951.
3. Kresky, B. & Goldwater, L. J., Occupational Potentials of Cardiac Patients, Am.Heart J. 227:623:1944.
4. The Heart of the Home, Committee on Cardiovascular Disease in Industry, New York Heart Assn., N.Y., 1949.
5. Klapper, M., Cardiac Rehabilitation for Industry, Trained Nurse and Hospital Review 122:229:1949.

cardiac neurosis as a result of being told he had coronary disease or something equally serious, all based on improper interpretation of electrocardiograms.

The above article which contains many practical suggestions was prepared by Doctor Beatrice Kresky, Rockville Centre, N. Y., and is reproduced from the March 1951 issue of MODERN CONCEPTS OF CARDIOVASCULAR DISEASE.



XVI. SCHISTOSOMIASIS JAPONICA IN JAPAN

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Schistosomiasis japonica, or Oriental blood fluke disease, caused by the parasite *Schistosoma japonicum*, is known to be endemic in the Far East. It was originally described from Japan and its continued existence there was recognized by both Japanese and American epidemiologists. The disease is caused

by a minute (about 0.25 mm.), skin-penetrating, larval parasite, called a cercaria that emerges from a small fresh-water snail. Thus the infection is limited only to those areas in which these snails thrive, where it is acquired as people swim, work, wade, wash clothes and/or vehicles, or possibly drink the infested water. Only a single species of snail, *Oncomelania nosophora*, is known to transmit the disease in Japan.

Because questions are raised each year concerning areas to be put "Off Limits" for recreational purposes on account of this disease, it seems appropriate to outline the five known regions of Japan in which the disease occurs. It is hoped that this information will be useful to persons in command of troops as well as those in charge of isolated, or smaller units, or those associated with the recreational program of Japan. These areas are delineated below:

THE TONE VALLEY:

The snail host occurs in the marshy areas between the levees and the channel of the Tone River, involving Ibaraki Prefecture on the north and Chiba to the south. Most of the distance between Sakai to the west and Sawara, 50 miles down river, is involved. The disease may extend below Sawara. Additional foci include Sakura in Chiba Prefecture and the vicinity of Towa and Hikonari villages immediately north of Tokyo and just west of the Edo River in Saitama Prefecture.

THE KOFU VALLEY:

This valley lies in Yamanashi Prefecture nearly 100 miles west of Tokyo. It has an area of approximately 90 square miles and is probably the largest and most densely populated endemic region in Japan. The incidence of the disease is very high in many parts of this valley. The snails are limited to the irrigation ditches and the paddies in such vicinities. No

snails have ever been found around the five lakes at the base of Mt. Fuji so these waters may be regarded as being safe for recreational purposes as far as schistosomiasis is concerned.

THE NUMAZU AREA:

This region lies in Shizuoka Prefecture and begins at the western edge of the city of Numazu and formerly extended for 10 miles west along the mile wide coastal plain through Sudo village. Actually today only two foci still exist; one at the northwest edge of Numazu and the other in the marshes around Sudo village, the intervening areas apparently being devoid of snails.

THE KATAYAMA AREA:

This endemic center situated in Hiroshima Prefecture is where the disease was first found and is located immediately to the north of Fukuyama City. It is a relatively small area along the Takaya and Ashida rivers; snails are largely limited to the irrigation ditches.

THE TOSU-KURUME AREA:

This region lies in Fukuoka and Saga Prefectures and is one of the largest endemic areas of Japan and covers about 90 square miles between Tosu on the north and Kurume on the south, in contiguous Saga and Fukuoka Prefectures. There is a dense snail population in the vicinity of Kurume and along the Chikugo River as well as in the irrigation ditches throughout the region.

The possibility of control of *schistosomiasis japonica* is being carefully studied. Considerable time and money have been spent in Japan as well as in other parts of the world on this problem, but without success. A program of control by means of more effective molluscicides was initiated at the 406th Medical General Laboratory in 1947. Numerous chemicals have been screened and promising ones tested in the field. An area of 150 acres in Nagatoishi, near Kurume in Fukuoka Prefecture, was placed under treatment for two years with sodium pentachlorophenate (Santobrite). After the initial treatment of 1951, at the beginning of the second, it was found that 99.5% of the snails had been destroyed. It is hoped that this will prove to be a practical means of eradicating the snails and so controlling the disease.

XVII. SCHISTOSOMIASIS JAPONICA IN THE FAR EAST

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The endemic areas of *schistosomiasis japonica* in Japan have been outlined in the preceding article. It now remains to consider the disease in other areas of the Far East. These will be summarized briefly:

KOREA:

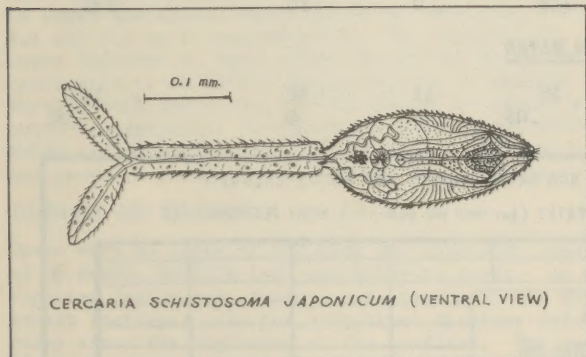
The TB MED 208 on Korea suggests the presence of *S.*

japonicum in Korea. However, no evidence of the disease was found in a survey made in South Korea in 1948, no snail hosts were encountered, no record of autochthonous infections and no information on the presence of cases from Japanese parasitologists who lives in Korea for many years. Two cases of schistosomiasis, found at autopsy, were reported in the literature in 1926, but subsequent evidence points to a probable error in the identification of the

eggs. Thus it must be concluded that schistosomiasis japonica is not present in Korea.

FORMOSA:

Schistosomiasis japonica is known to be established among the mammals in Formosa. One area in Taichung Prefecture, in the central part, was found to be endemic for man. Recently a second area was discovered in Kaoshiung Prefecture, at the southern end. The snail intermediate host, Oncomelania formosana is widely distributed along the west coast and several other regions are suspected of harboring human cases. Consequently, it is well to regard the entire western half of the island with suspicion, as infected snails may be present, due to the wide distribution of the snail and various mammalian hosts.



CHINA:

This disease is widespread throughout many areas of China. In general the chief endemic areas embrace the Yangtze Valley, especially the tributaries and neighboring lakes. It also occurs down the coast from the mouth of the Yangtze to Hongkong. Any region in this general area should be regarded as a potential schistosomiasis area and treated as such. Several species of the snail belonging to the genus Oncomelania serve as the intermediate host.

THE PHILIPPINES:

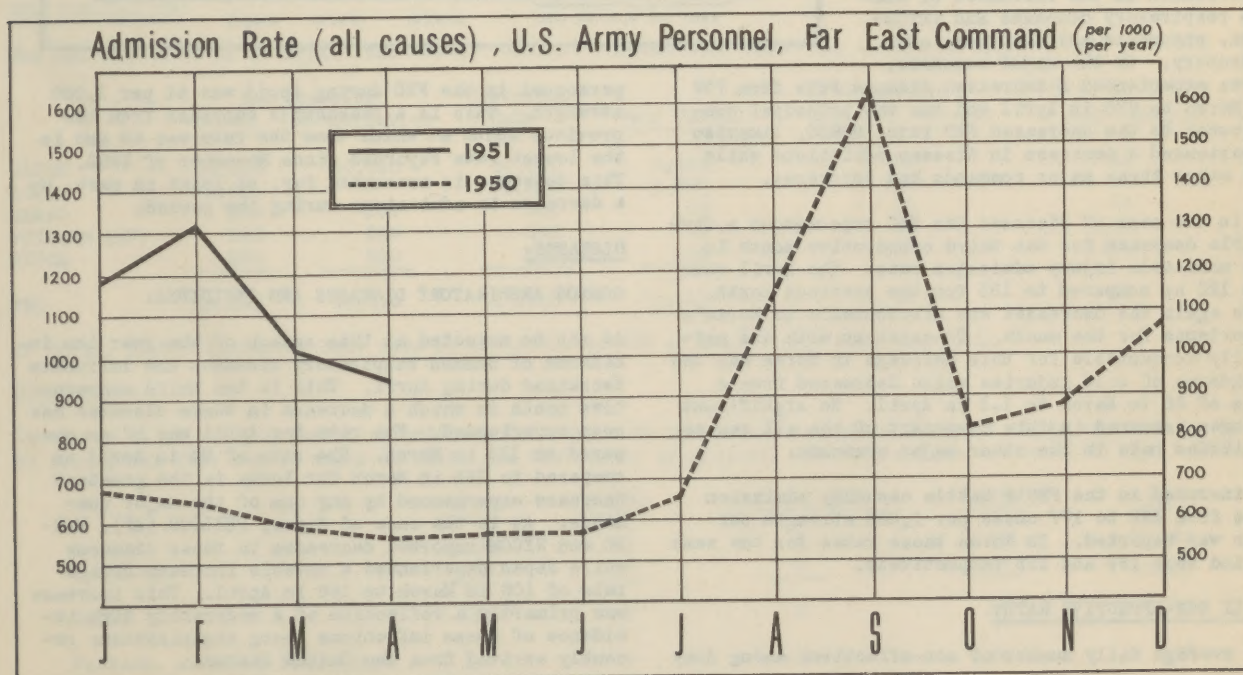
Five of the main islands possess endemic areas of schistosomiasis japonica. These are: the southern tip of Luzon, the northeastern coast of Mindoro, several isolated areas on Samar and Mindanao and the eastern coastal plain of Leyte. In these areas the snail host is Oncomelania quadrasi.

THE CELEBES:

Recently schistosomiasis japonica was discovered to be endemic near Lindo Lake in the Paloë district. Here, 50% of the inhabitants of three villages, as well as dogs and native deer, are infected.

Taking all of the endemic areas for schistosomiasis japonica in the Far East into consideration it has been calculated that at least 46 million persons are infected. From this figure it will be realized that schistosomiasis constitutes one of the more important diseases of the Orient.

HEALTH OF ARMY TROOPS, FEC



Admission rates per 1,000 troops per annum Army personnel, for the 4-week period ending 27 April 1951 were:

	FEC	JAPAN	KOREA	MARBO	PHILCOM (AF)	RYCOM
All Causes	955	671	1084	343	398	665
Diseases	656	619	678	238	347	627
Injuries	122	52	163	106	51	38
Battle Casualties	177	0	253	0	0	0
Psychiatric	32	19	38	11	10	15
Common Respiratory Diseases and Flu	97	146	83	50	41	35
Primary Atypical Pneumonia	2.1	2.0	2.3	0	0	0
Common Diarrhea	8.1	5.6	9.5	0	0	0
Bacillary Dysentery	.09	.34	0	0	0	0
Amebic Dysentery	.44	1.0	.25	0	0	0
Malaria, new	11	8.4	12	0	10	1.2
Infectious Hepatitis	26	9.2	33	5.5	10	6.2
Mycotic Dermatoses	1.3	3.8	.50	0	0	0
Rheumatic Fever	.48	0	.69	0	0	0
Venereal Diseases	136	185	115	0	20	246

DAILY NON-EFFECTIVE RATES

All Causes	41	115	15	11	52	14
Venereal Diseases	.06	.14	.03	0	0	.02

ALL CAUSES ADMISSION RATE:

During April, Army personnel of the FEC were admitted to hospitals, quarters and dispensaries for all causes at a rate of 955 per 1,000 strength per year as against 1,014 for the previous month. The decrease was attributable to decreases in disease and nonbattle injury admission rates. A notable increase occurred in the admission rate for battle casualties.

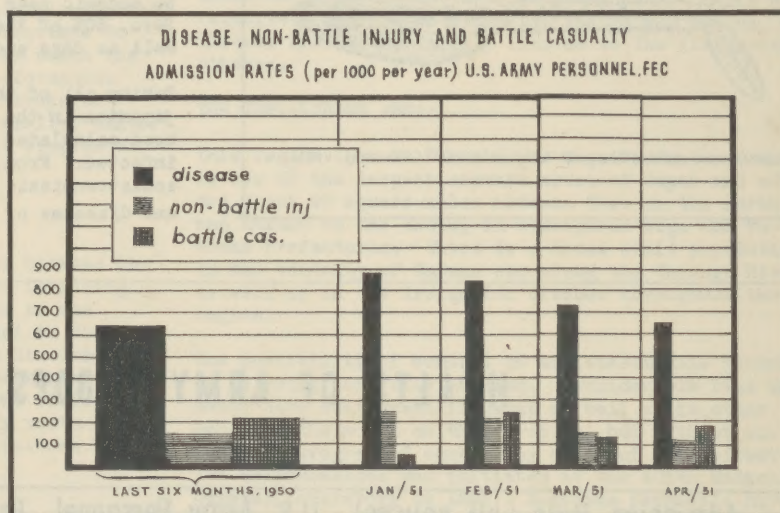
For the third consecutive month, the incidence of diseases among Army personnel of the FEC decreased. The rate for April was 656 as compared to 721 in March, 850 in February and 886 in January. Among reportable diseases the most notable decreases were experienced in the incidence of common respiratory diseases and influenza, pneumonia and diarrheas and dysentery. Of the major commands, Korea experienced a decreased disease rate from 797 in March to 678 in April and was the principal contributor to the decreased FEC rate; MARBO, likewise experienced a decrease in disease admissions while the other three major commands had increases.

As in the case of diseases the FEC experienced a favorable decrease for the third consecutive month in the nonbattle injury admission rate. The April rate was 122 as compared to 153 for the previous month. Here again the decreases are attributable to Korea's experience for the month. Co-existent with and primarily accountable for this decrease in Korea was the incidence of cold injuries which decreased from a rate of 36 in March to 1.2 in April. No significant changes occurred in this component of the all causes admission rate in the other major commands.

An increase in the FEC's battle casualty admission rate from 132 to 177 cases per 1,000 strength per year was reported. In Korea these rates for the same period were 189 and 253 respectively.

DAILY NON-EFFECTIVE RATE:

The average daily number of non-effectives among Army



personnel in the FEC during April was 41 per 1,000 strength. This is a reasonable decrease from the previous month at which time the rate was 49 and is the lowest rate reported since November of 1950. This decrease is accounted for, at least in part, by a decrease in admissions during the period.

DISEASES:

COMMON RESPIRATORY DISEASES AND INFLUENZA:

As may be expected at this season of the year the incidence of common respiratory diseases and influenza decreased during April. This is the third consecutive month in which a decrease in these diseases has been experienced. The rate for April was 97 as compared to 122 in March. The rate of 83 in April as compared to 133 in March for Korea is the greatest decrease experienced by any one of the major commands. As in the case of Korea, PHILCOM (AF), MARBO and RYCOM reported decreases in these diseases while Japan experienced a notable increase from a rate of 106 in March to 146 in April. This increase was primarily a reflection of a moderately high incidence of these infections among organizations recently arrived from the United States.

PSYCHIATRIC:

Admissions for psychiatric conditions in the FEC during April remained the same as for the previous month, 32. As was emphasized in the report covering the health of the command for the month of March, this rate is considered very favorable. Among the major commands, Japan reported a decrease in rate from 24 in March to 19 for this month, RYCOM's rate increased from 4 to 15 during the same period, while in the other commands the rate remained static.

MALARIA:

There was an increase in the rate of new cases of malaria in April. The rate for the FEC rose from 2.2 in March to 11 in April. Sharpest increases occurred in Japan and Korea, where the rates rose from 1.9 to 8.4 and 2.4 to 12 respectively. The majority of cases reported in these areas during the month are considered to be latent manifestations of malaria infection last season and not the result of recent mosquito transmission. RYCOM reported one case, while MARBO and PHILCOM (AF) reported exactly the same as the previous month -- .0 and 1 case respectively.

DIARRHEA AND DYSENTERY:

There were no cases of diarrhea and dysentery reported by MARBO, PHILCOM (AF) and RYCOM in April. As was reported last month, Korea's rate for March was the lowest incidence rate for intestinal diseases infections since the beginning of the conflict. The rate for Korea in April fell even lower and was 10 per 1,000 per annum. Japan's increase from 3.1 in March to 7.2 in April was the only command experiencing an increase in these diseases. The overall rate for the FEC dropped from 15 to 8.9.

INFECTIOUS HEPATITIS:

There was a slight increase in the already high rate of infectious hepatitis in the FEC. For April the rate was 26 as compared to 24 for the preceding month.

HOSPITALIZATION:

The bed status as of 27 April 1951 was as follows: (These data cover all patients, Army, AF and others.)

	Bed Capacity		Operating		% Normal Bed	% of Operating
	Normal	Mobilization	Beds	Beds Occupd.	Capacity Occupd.	Beds Occupd.
JAPAN	10,100	10,860	10,100	9,364	93	93
KOREA	3,020		3,020	1,698	56	56
MARBO	200	200	200	25	13	13
PHILCOM (AF)	250	250	143	73	29	51
RYCOM	250	300	250	251	100	100
FEC	13,820	11,610	13,713	11,411	83	83

In Korea, 10,950 operating beds were established for POW of which 8,100 were occupied.

EVACUATION:

Tabulated below are the number of patients (all types of personnel) evacuated from the major commands to the ZI during the four report weeks in April and the number of patients awaiting evacuation as of 27 April 1951:

	JAPAN	MARBO	PHILCOM (AF)	RYCOM	FEC
By Air	2,105	2	9	72	2,188
By Water	19	0	0	14	33
Total	2,124*	2	9	86	2,221
Patients Awaiting Evacuation	122	0	0	24	146

(* 1,298 patients originated from Korea)

Among the major commands, the rates remained rather static when compared to previous rates.

VENEREAL DISEASE:

The venereal disease rate for Army personnel of the FEC was 136 for April and represents a slight increase from the March rate of 130. An increase in the number of these diseases in Korea and RYCOM accounts for the FEC's increased rate. Japan's rate decreased from 206 in March to 185 in April and PHILCOM (AF)'s from 69 to 20. MARBO reported no cases during the month. The daily non-effective rate of .06 per 1,000 per day resulting from venereal diseases depicts no change from the previous month. It is of interest that even with increases in the number of cases reported, RYCOM and Korea experienced daily venereal disease non-effective rates of only .02 and .03 respectively.

SMALLPOX:

Among United States Army personnel of the FEC, two cases of smallpox occurred during April, both in Korea. In addition to the above cases, one case occurred among United States Air Force personnel and one among Turkish personnel. No deaths were reported among these cases.

MEASLES:

During the month, there were 221 cases of measles reported in the FEC. This is a considerable increase over the 69 admitted the previous month. 171 of the total were reported from Japan and occurred chiefly among troops recently arrived from the United States.

DEATHS:

During the 4 weeks covered in the April report period, 157 deaths among Army personnel were reported by medical treatment facilities in the command. 105 of these were among battle casualties, 34 among non-battle injuries and 18 among disease cases.

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The Chief Surgeon extends an invitation to all personnel of the Army Medical Services to prepare and forward, with view to publication, articles of professional or administrative nature. It is assumed that editorial privilege is granted. Copy should reach the Medical Section, General Headquarters, Far East Command, not later than the 10th of the month preceding the issue in which publication is desired.

Lt. John J. Griffin, Editor

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